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## Process for encapsulating dissolved reactants of color reaction system and resulting capsules

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Inventor: HARTMANN CLAUD; PIETSCH GUENTHER

Applicant: KOEHLER AUGUST PAPIERFAB

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- european: B01J13/02, B41M5/165

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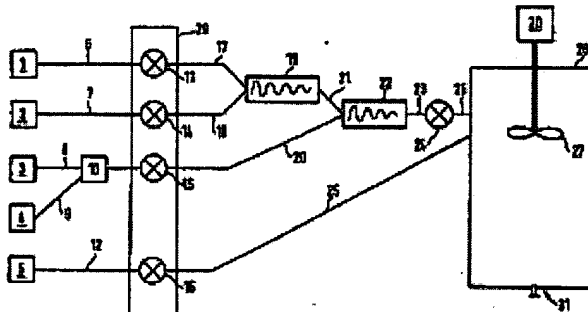
Also published as:

EP0160783 (A1)  
US4748146 (A1)  
US4684574 (A1)  
EP0160783 (B2)  
EP0160783 (B1)

Abstract not available for DE3442268

Abstract of correspondent: **US4684574**

The invention relates to a process for encapsulating solutions of reactants of color reaction systems by means of conventional encapsulation processes, the reactant initially being dissolved in a solvent with a good dissolving power and immediately prior to emulsification or encapsulation, a non-solvent, which only dissolves the reactant to an insignificant extent, is admixed with the fresh solution obtained in a quantity which adjusts a supersaturated system, the capsules obtainable as a result thereof, as well as their use with an encapsulated solution of a basic color former, which supplies a color by the reaction with acid reactants, in non-carbon paper.



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WPI Acc No: 1985-224348/ 198537

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**Encapsulation of co-reactants of colour reaction system for copy paper -  
by adding non-solvent to fresh soln. in good solvent just before  
encapsulation**

Patent Assignee: KOEHLER PAPIERFAB AG AUGUST (KOEH-N)

Inventor: HARTMANN C; PIETSCH G

Number of Countries: 014 Number of Patents: 010

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
DE 3442268	C	19850905	DE 3442268	A	19841119	198537 B
EP 160783	A	19851113	EP 85101357	A	19850208	198546
JP 60232991	A	19851119	JP 8544984	A	19850308	198601
US 4684574	A	19870804	US 85708284	A	19850305	198733
US 4748146	A	19880531	US 8750913	A	19870515	198824
DE 3563330	G	19880721				198830
IL 75618	A	19880531				198832
EP 160783	B	19880615				199102
EP 160783	B2	19910102				199102
JP 92041913	B	19920709	JP 8544984	A	19850308	199232

Priority Applications (No Type Date): DE 3442268 A 19841119; DE 3408745 A 19840309

Cited Patents: DE 2447103; FR 2083121; FR 2235804; US 3940275; US 4333849; DE 2134236; DE 2306454; DE 3346601; US 3578844

Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
DE 3442268	C		7	B	
EP 160783	A	G		B	
Designated States (Regional): AT BE CH DE FR GB IT LI LU NL SE					
EP 160783	B	G		B	
Designated States (Regional): AT BE CH DE FR GB IT LI LU NL SE					
EP 160783	B2			B	
Designated States (Regional): BE CH DE FR GB IT LI LU NL SE					
JP 92041913	B		8	B	Based on patent JP 60232991
JP 60232991	A			B	
US 4684574	A			B	
US 4748146	A			B	
DE 3563330	G			B	
IL 75618	A			B	

Abstract (Basic): DE 3442268 C

In the encapsulation of solns. of co-reactants (I) of colour reaction system by normal microencapsulation processes, (I) are first dissolved in a good solvent (II) and the fresh soln. obtd. is mixed with a nonsolvent (III), which alone hardly dissolves (I), in an amt. giving a supersaturated system, just before encapsulation.

Pref. (I) are the basic colour forming reactants (IA) or acid co-reactants (IB) of the system. (IA) pref. are lactone, fluoran, phthalide, di- or tri-phenylmethane and/or spiropyran derivs., opt. mixed with N-benzoyl-leuco-methylene blue and/or N-alkyl-carbazolyl-diphenylmethane derivs. (IB) pref. are acid phenolic

cpds. (II) is an aromatic solvent and/or chlorinated paraffin, pref. alkylated biphenyl, alkylated naphthalene, alkylated terphenyl and/or diarylalkane cpd. (III) is a non-aromatic solvent, pref. aliphatic and/or cycloaliphatic solvents.

USE/ADVANTAGE - The microcapsules are claimed for use in colour reaction papers. A strongly supersatd. soln. contg. cheap (III) can be used, without detriment to the colour reaction, provided that this is freshly prepd.

Dwg.0/1

Abstract (Equivalent): EP 160783 B

A process for encapsulating a soln, present in an aq emulsion, of a reaction partner of colour reaction systems by ordinary micro-encapsulation methods, wherein the reaction partner is first dissolved in a solvent with good dissolving capacity for it and a non-solvent, which at most inappreciably dissolves the reaction partner, is admixed with the solvent thereby obtd, and this soln is converted by mixing with an aq phase into an aq emulsion and the micro-encapsulation process is carried out therewith, characterised in that a non-solvent, in a quantity adjusting a super-satd soln, is admixed with rapid mixing with the soln obtd with the solvent of good dissolving capacity, and the super-satd soln is immediately thereafter emulsified in the aq phase with rapid mixing and thereafter is encapsulated, before a premature troublesome crystallising-out of the dissolved reaction partner has taken place. (10pp)

Abstract (Equivalent): US 4748146 A

Process for colouring paper substrates (not carbon papers) comprises application of an encapsulated dye precursor and also a dye-generating reagent to the paper; rupture of the capsules so that the dye precursor and reagent mix well, generating coloured prods; and drying. Prodn. of the capsules comprises dissolving the dye precursor in a suitable solvent; and dispersion with a non-solvent in the presence of an emulsifier and opt. an encapsulating agent.

ADVANTAGE - The process facilitates rapid and continuous paper dyeing. (8pp)i

US 4684574 A

Encapsulated prepns. of components are prepd. by (a) dissolving an effective amt. for use in a colour reaction system of at least one component (I) selected from (i) colour formers and (ii) acid reactants in a solvent in which the said amt. of component (I) is soluble, to form a component-solvent soln; (b) admixing in the soln., in an amt. sufficient to form a supersaturated soln. with respect to component (I), a non-solvent fluid in which component (I) is insol. and, without delay and while the supersaturated soln. is fresh; (c) emulsifying and encapsulating the super-satd. soln.

Pref. the solvent is an aromatic hydrocarbon- or chlorinated hydrocarbon solvent, a paraffin or a mixt. of these.

USE - Capsules obtd. are useful in non-carbon papers. (7pp)

Title Terms: ENCAPSULATE; CO; REACT; COLOUR; REACT; SYSTEM; COPY; PAPER;

ADD; NON; SOLVENT; FRESH; SOLUTION; SOLVENT; ENCAPSULATE

Derwent Class: E24; G05; P73; P75

International Patent Class (Main): B41M-005/165

International Patent Class (Additional): B01J-013/02; B41M-005/14;

C09B-067/02

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M416 M510 M520 M530 M541 M610 M620 M781 M782 M903 N104 Q130 Q315  
Q345 Q347 Q615 R033

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